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AUTHOR Wilson, Myoung Chung; Edelman, Hendrik
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ABSTRACT

Collection development and management in academic libraries continue to present a considerable challenge, especially in interdisciplinary fields. In order to ascertain patterns of interdisciplinary research, including the patterns of demand for bibliographic resources, this study analyzes the input/output factors that are related to the research activities and subsequent publications of the faculty of the School of Communications, Information and Library Studies (SCILS) at Rutgers University (New Jersey). This school was studied because its mission is explicitly interdisciplinary. A list of the SCILS faculty publications was obtained through the University Computing Center, where the records of the annual survey of faculty activities are kept. The input portion of the study identified the Library of Congress classification numbers of those works that were cited by SCILS faculty who were carrying out research leading to publication. The output portion of the study identified the SCILS faculty publications by their Library of Congress classification numbers. A total of 1,622 titles were analyzed. Analyses of the data indicate that approximately 46% of the intellectual endeavor of the SCILS faculty falls outside of their own disciplinary areas. In addition to being consumers of materials from other fields, the faculty are also producers in those fields. It is imperative that selection librarians understand the fluidity of current research activities and the extent of interdisciplinary demands that are being placed upon research collections. (Author/SD)

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COLLECTION BUILDING FOR INTERDISCIPLINARY RESEARCH: AN ANALYSIS OF INPUT/OUTPUT FACTORS

MYOUNG CHUNG WILSON , COORDINATOR FOR SCHOOL OF COMMUNCIATION, INFORMATION AND LIBRARY STUDIES
ALEXANDER LIBRARY
RUTGERS UNIVERSITY
NEW BRUNSWICK, NJ 08903

HENDRIK EDELMAN, PROFESSOR
SCHOOL OF COMMUNICATION, INFORMATION AND LIBRARY STUDIES
RUTGERS UNIVERSITY
NEW BRUNSWICK, NJ 08903

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ABSTRACT

Collection development and management in academic research libraries continue to present a considerable challenge, especially in interdisciplinary fields. In order to ascertain patterns of interdisciplinary research, including the patterns of demand for bibliographic resources, this study analyzed the input/output factors that are related to the research activities and subsequent publications of the faculty of the School of Communication, Information and Library Studies at Rutgers. The School was chosen for this study because its mission is explicitly interdisciplinary. The list of the SCILS faculty publications was obtained through the University Computing Center where the records of the annual survey of faculty activities are kept. The input portion of the study identified the LC classification numbers of those works that were referenced by SCILS faculty who were carrying out research leading to publication. The output portion of the study identified the SCILS faculty publications by their LC classification numbers. A total of 1622 titles were analyzed. The results of this study confirmed our initial assumptions regarding the extent of interdisciplinary research. Our findings also indicate that approximately 46% of the intellectual endeavor of the SCILS faculty falls outside of their own disciplinary areas. It is clear from the data that, in addition to being consumers of materials from other fields, a finding which should not be surprising, they are also producers within those fields, a fact which underscores their multidisciplinary efforts. It is, therefore, imperative that selection librarians understand the fluidity of current research activites and the extent of the interdisciplinary demands that are being placed on research collections.

COLLECTION BUILDING FOR INTERDISCIPLINARY RESEARCH: AN ANALYSIS OF INPUT/OUTPUT FACTORS

BACKGROUND

The main objective of this study was to measure by bibliometric means the degree to which modern scholarship is reaching past disciplinary borders. Although the largest university component that promotes interdisciplinary research is the research university library, libraries still reflect a discipline-based academic priority by themselves being organized and administered along disciplinary lines. Although humanities collections and services have been consolidated in most universities, there are many departmental and special subject collections that are still organized by academic discipline or department. This kind of subject division along traditional lines is especially prevalent in the allocation of resources, notably the book budget.

However, due to the exponential growth of interdisciplinary research activities on university campuses since the early 1970's, academic librarians have begun to study the impact of the growth of interdisciplinary research on library collection patterns, budget allocations, service, usage patterns, and collection location sites. The validity of the traditional demarcation of subject responsibilities of individual librarians is thus questioned.

A recent survey regarding research information needs in the social sciences found that the most common charateristic of four social science disciplines is that they rely heavily on other disciplines(1). According to this study, economists draw most often upon statistics, mathmatics and engineering(2). ; the field of political science is characterized as being "tremendously fragmented" and political scientists rely on a "huge variety of sources."(3); the same study found that psychologists move ever more widely into science and social science disciplines(4); while the inherent interdisciplinary nature of the field of anthropology (5) is being reinforced. A similar study of the information needs of humanities scholars also concluded that the most striking trend in

the humanities is the spread of interdisciplinary work into the corners of virtually every discipline (6).

Recent literature suggests that library collection development must increasingly take account of the fact that materials purchased and cataloged under disciplinary headings no longer serve the needs of a particular disciplinary group. Instead, scholarship has largely moved beyond the confines of single academic areas of inquiry. The organizational consequence has been an explosion of multidisciplinary programs which seek to give academic coherence to this phenomenon.

Chartered in 1766 as Queen's College, the eighth institution of higher learning to be founded in the colonies, Rutgers became the land-grant college of New Jersey in 1864 and gained the status of State University in 1956. Rugters now has a student body of 47,000 on three campuses in Camden, Newark, and New Brunswick. The University is comprised of twenty-six degree granting divisions: thirteen undergraduate colleges, eleven graduate schools, and two schools offering both undergraduate and graduate degrees. Five are located in Camden, seven in Newark, and fourteen in New Brunswick. The Rutgers library system that supports these academic programs is comprised of 18 unit libraries located on all three campuses.

As is true for other major universities in the nation, Rutgers has experienced the trend toward the development of specialized schools, research institutes and programs. The trend at Rutgers is compounded by geographic dispersion and by a historical legacy which saw the development of the university from formerly disparate undergraduate colleges. Rutgers, therefore, while sharing the general problems that universities experience in managing rapidly developing and overlapping areas of knowledge, must also deal with problems particular to itself. Most prominent among these from a library perspective is the multiplicity of the collections within the system. Particularly, the physical division of the general humanities and social sciences collections on the New Brunswick campus and a group of specialized science libraries on the Piscataway campus creates a real challenge for interdisciplinary approaches to library services. Funds are allocated per library and then divided among departments or disciplines , and the selection procedures are

decentralized. A consolidated RLG Conspectus has been prepared, but it does not reflect the internal distribution and overlap.

The School of Communication, Information and Library Studies (SCILS) at Rutgers is an ideal site for studying the impact of interdisciplinary research on library collection. Established in 1982, the School represents the latest model of academic mergers where a program is laid out along the intellectual routes of trade(7) between the disciplines of Communication, Information Science, Library Studies, Journalism and Mass Media. Since the merger took place, it is claimed that research at SCILS has been increasingly interdisciplinary(8); it has become a sophisticated laboratory that examines and processes information-related phenomena from a variety of sources, producing an output that is greater than the sum of its parts. At the undergraduate level, SCILS offers majors in Communication, Journalism and Mass Media; at the graduate level, it offers Master's degree programs in Library and Information Studies (MLS), and Communication and Information Studies (MCIS); a Ph.D. program in Communication, Information and Library Studies is also offered. A total of 65 faculty participate in these academic programs. There are currently more than 900 undergraduate majors and premajors; 50 MCIS and 245 MLS candidates, and 70 Ph.D. candidates are currently registered.

The specific purpose of this study, therefore, was to measure the degree to which the faculty at SCILS reached past their own disciplinary identifications in carrying out their research. The measurement of such activities was conducted by analyzing the research input/output of the SCILS faculty. The following issues were addressed:

1. What areas of knowledge do the faculty consult?
2. In what disciplinary journals do faculty publish?
3. What LC classification is accorded to the published output?
4. What patterns emerge from analysis of input/output?

The various units of analysis were differentiated by using the following classifications: The LC classification schedule comprised of letters constituted the highest units of analysis. The RLG Conspectus clusters were the next highest unit; LC subclasses (letter and number) were the lowest

unit of analysis.

RESEARCH PROCEDURE AND METHODOLOGY

A graduate student from SCILS was retained as a research assistant in October, 1989. The investigators determined that the Assistant should analyze the input/ouput items for the academic year 1986-1987. The purpose was to establish time effective guidelines for the project and to uncover any unforseen problems that might be encountered. (The report of the research assistant, Patrick Yott, is attached) Based on this test run report the following was decided: One, due to the extremely large number of input titles and to limitations of time and funding, it was agreed that 10% of all input items would constitute an appropriate sample. Two, it was decided to exclude the input materials from monographs. Unlike journal articles and dissertations that purport to address areas of current intellectual interests, the content of some monographic works do not meet this criterion, e.g. some are textbooks and/or annotated bibliographies.

The project was then conducted in three phases. The first was to divide the output titles of all SCILS faculty for the last five years (1983-1988) according to whether a publication was a journal article or a monograph. Due to the significant contributions of doctoral dissertations to the literature of the profession, the last five years of doctoral dissertations written at the School were added to the monographic portion of faculty publications as an equal component. Chapters contained in monographs were treated as parts of books. The Library of Congress classification numbers were obtained for all three categories of material in order to determine the subject assignments of these publications. Both OCLC and RLIN databases as well as the Rutgers University Library card catalog were searched to obtain the Library of Congress classification information. A number of dissertations required original cataloging in order to obtain LC classification information.

No attempt was made to rank publications in terms of the prestige of the journal or the publisher. This aspect of the study was carried out using the publication lists made available by

the Rutgers University annual survey of faculty activities provided by the University Computing Center. The list of doctoral dissertations was provided by the 0ffice of the Ph.D. Program at SCILS. A total of 263 output titles were analyzed. This list excluded titles that were noted as "in press" in the survey for the academic year 1988-1989.

In the second phase of the study the works were analyzed in terms of footnote references and bibliographic citations. This phase, although second in the sequence of overall analysis, was the input portion. It was primarily concerned with those works that had been referenced in carrying out the research that led to publication. The sources for input analysis (1359 titles) were journal articles, chapters in books, and dissertations.

The third phase of the study was to cluster the input/output data according to the LC Classification Schedule and the RLG conspectus clusters. The data then were graphically entered by percentages into Circket graph on a Macintosh SE computer. Clusters that were less than five titles were collapsed into the Miscellaneous (Other) category. The LC Classifcation subclasses were used when no RLG Conspectus clusters were identified. (LC subclasses that contained less than five titles were also categorized as "Other"). Finally, the current Rutgers conspectus status assigned to input clusters was identified in order to compare the existing collection strengths and collecting intensities for the subject areas that the SCILS faculty used as input materials.

FINDINGS

1. INPUT ANALYSIS

A total of 1622 titles were analyzed for both the input and output aspects of the study. Of these, 1359 titles (10% of all input titles) were inputs. Figure 1 is the highest level of subject analysis according to the Library of Congress classification schedule. It clearly indicates that the faculty of SCILS used input materials from diverse sources of knowledge. Their own works were also distributed widely throughout the Library of Congress classification schedule but in a less diverse manner.

In fact, the input material utilized by the SCILS faculty covered all 22 ranges of the LC

classification schedules. In addition to heavy uses of Library and Information Science related materials (LC classification numbers Z and QA 75-76) and Communication and Journalism materials (LC classification P87-96 and PN4000-5650), the disciplinary areas that this faculty is primarily identified with, input materials were drawn heavily from such areas as psychology and social sciences, particularly social psychology and education. Figure 2 illustrates by percentages the six most frequently used areas of knowledge. Fifty four percent of input materials used by the SCILS faculty were drawn from the subject areas of primary identification, i.e. the Library of Congress classification letters Z and P schedules. The remaining 46% of the input materials were drawn from subject areas not considered "their fields or disciplines." The School is located on the New Brunswick campus, where the libraries also hold most of the primary materials. Books and journals in psychology and computer sciences are held in spcialized libraries on the Piscataway campus.

Figures 3-7 report the analyses of input materials by divisions of the RLG conspectus clusters . When no RLG conspectus cluster was identified, the 5th edition of the LC Classfication Outline was used to identify LC subclassses comparable to RLG conspectus clusters. The numeric codes assigned to each conspectus cluster are the current Rutgers' assessment of these subject areas according to existing collection strength and current collecting intensity. The letter "E" represents the English language materials collection.

From the input materials that were used, a total of 24 conspectus clusters were identified that were used as input materials. With the exception of two or three instances, the Rutgers' assessment of all areas are at 3/3 (that is, the SCILS faculty input materials were drawn from subject areas where the Library collects at research levels). More specific analyses of each subject area are as follows:

Figure 3 represents LC classification schedule B -- philosophy, psychology and religion. In this subject area, the input materials that were most utilized came from a variety of sources in psychology, LC classification schedule BF. As Figure 4 indicates, among the social science disciplines, social psychology, industrial management (or organizational communication) and

general topics in sociology were heavily relied upon. The inauguration of the School's newest academic program, MCIS (Master of Communication and Information Studies), may explain the heavy uses of organizational communication by the SCILS faculty. Unexpectedly, Figure 5 indicates that the SCILS faculty relied heavily on materials dealing with higher education. Figure 6 demonstrates that in the classification schedule P that includes the fields of communication, mass media and journalism (the two major disciplines of the School) were heavily used as input materials. The Departments of Journalism and Communication are both undergraduate programs; the faculty of these Departments, however, participate in the Ph.D. program of the School. Therefore, in the last few years, the library has been reassessing the collection strength of these programs and their budget has been adjusted to reflect their new research focus. Figure 7 represents the LC classification schedule Q --mathmatics. The input materials used by SCILS faculty are overwhelmingly concentrated in the field of computer science and data processing. This pattern accurately reflects the School's emphasis on information science and information study as their major focus. Figure 8 shows the distribution of input materials according to the Library of Congress classification schedule Z - library science and bibliography. It is interesting to note that 1/3 of this category of materials was drawn from library science journal literature. It was also noted that Rutgers' assessment of the Z collection is fairly high; many RLG conspectus clusters in the Z category have a collecting intensity 4/4 . However, very few of these categories of materials were identified as having been used as input materials by the SCILS faculty.

2. ANALYSIS OF OUTPUT

The output titles, totaling 263, were comprised of all books, chapters in books, journal articles and doctoral dissertations published during the academic year 1983-1988. The monographic works were largely concentrated in the fields of Communication, Journalisim and Library Science. Two thirds of the journal articles published by SCILS faculty appeared in journals that report on research in Communication, Journalism, and Library and Information Studies. While materials from psychology (BF), education (L), and computer science and data processing (QA 76) were

extensively used as inputs, few output titles appeared in these categories.

Because the total of output titles were few in numbers relative to the sample of input titles, it was decided to utilize input/output percentage comparisions in order to assess the relative weighting of the LC classification scehdules that were assigned to the output titles. The table below shows these comparisions as percentages by the LC classification schedule.

TABLE

LC Classification Schedule	Output %		Input %
A- General works.	0	/	1
B-Philosophy. Religion. Psychology	3	/	8
D and E - History	.5	/	1
G-Anthropology	2	/	1
H-Social Sciences	15	/	18
L-Education	6	/	6
P-Language &Literature (includes Journalism and Communication)	20	/	14
Q-Science	2	/	6
R- Medicine	3	/	2
T-Technology	3	/	1
Z-Library Science. Biblriaphy	44	/	40

This table illustrates that ouput titles are heavily concentrated in three area. Two of these, P and Z, are within the areas of disciplinary concern for SCILS faculty.

CONCLUSION

The results of this study confirmed our initial assumptions regarding the extent of interdisciplinary research. As our findings indicate, approximately 46% of the intellectual

endeavor of the SCILS faculty falls outside of their own disciplinary areas. It is clear from the data that in addition to being consumers of materials from other fields, a finding which should not be so surprising, they are also producers within those fields, a fact which underscores their multidisciplinary efforts despite the continuing overall emphasis on works within specified traditional disciplinary areas. Anchored within defined intellectual territories, the SCILS faculty has reached out to a wide variety of fields. However, the consequences for collection development are not as onerous as we initially imagined. By continuing to collect research materials within disciplinary areas, it appears that these materials are classified in ways that are understood by faculty and available to them by subject areas.

Nevertheless, it is clear that materials collected in one disciplinary area are now being used by a wider audience. In this sense, it is imperative that selection librarians understand the fluidity of current research activities and the extent of the interdisciplinary demands that are being placed on research collections. This does raise questions regarding book fund allocation and the locus of collection development decision making.

Keeping abreast of this phenomena requires alertness and care regarding new developments in scholarship, especially as these are translated into formal academic programs. Only by continuing analysis of research patterns, carried out in a variety of contexts (e.g. Women's Studies, Environmental Studies, History of Science, etc.) can information be generated that will serve as the foundation for academically sound and fiscally responsible collection development policies.

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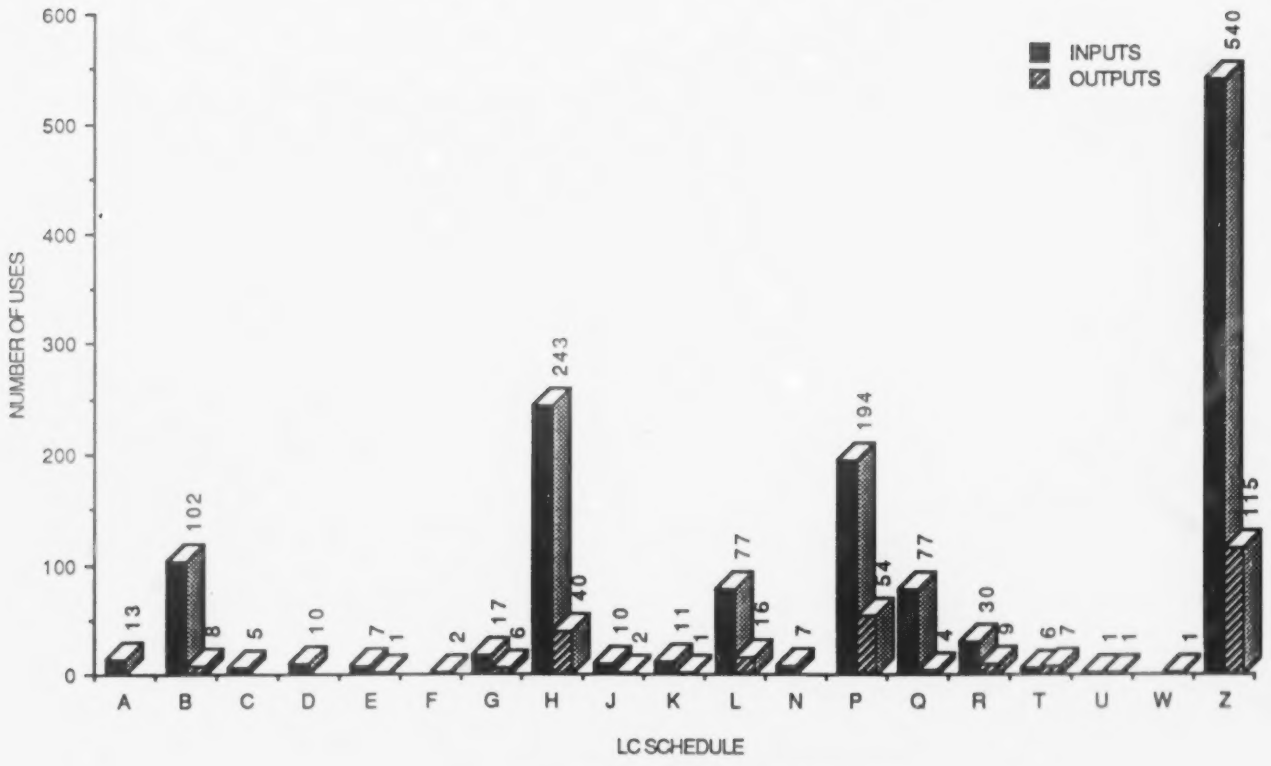

Figure 1. INPUT/OUTPUT FOR SCILS FACULTY

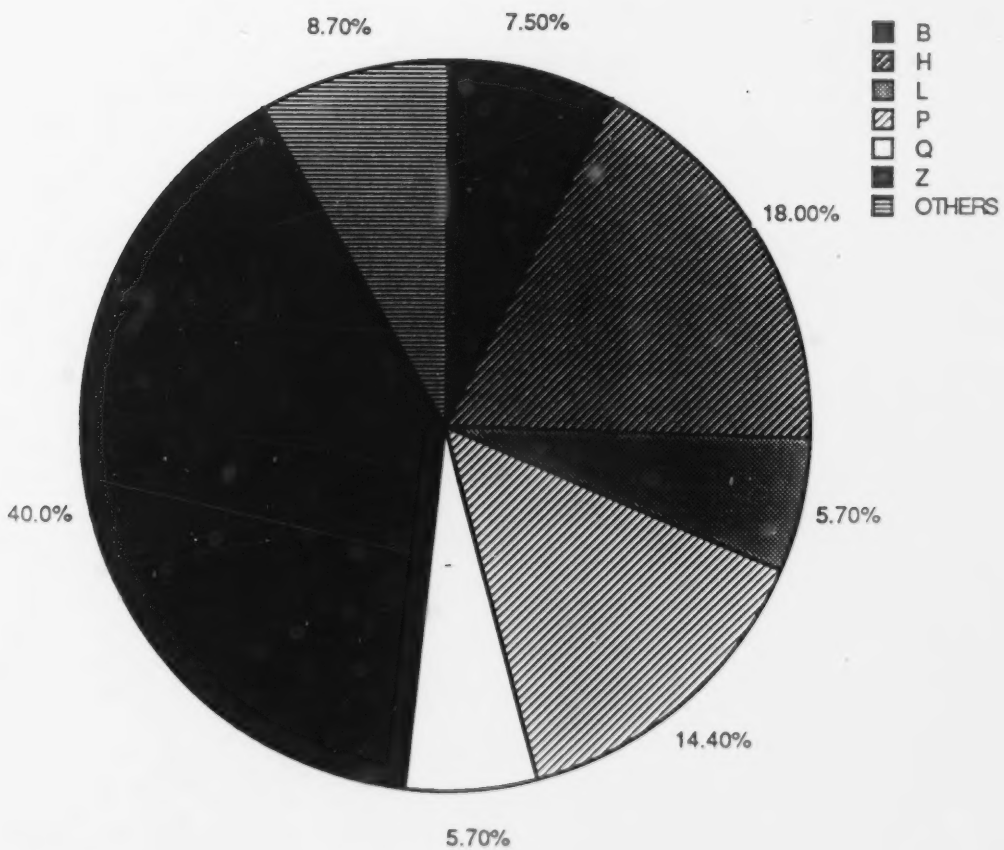

Figure 2. % INPUT BY LC CLASS

B790-4695 -- History & Systems (Modern) [3/3]
BD143-236 -- Epistemology [3/3]
BD493-708 -- Cosmology [2/2]
BF1-28 -- Psychology (General) [2b]
BF231-299 -- Sensation, Aesthesiology [3]
BF309-493 -- Cognition, Perception & Intuition [3]
BF636-637 -- Applied Psychology [3]
BF698-698.2 -- Personality [4]

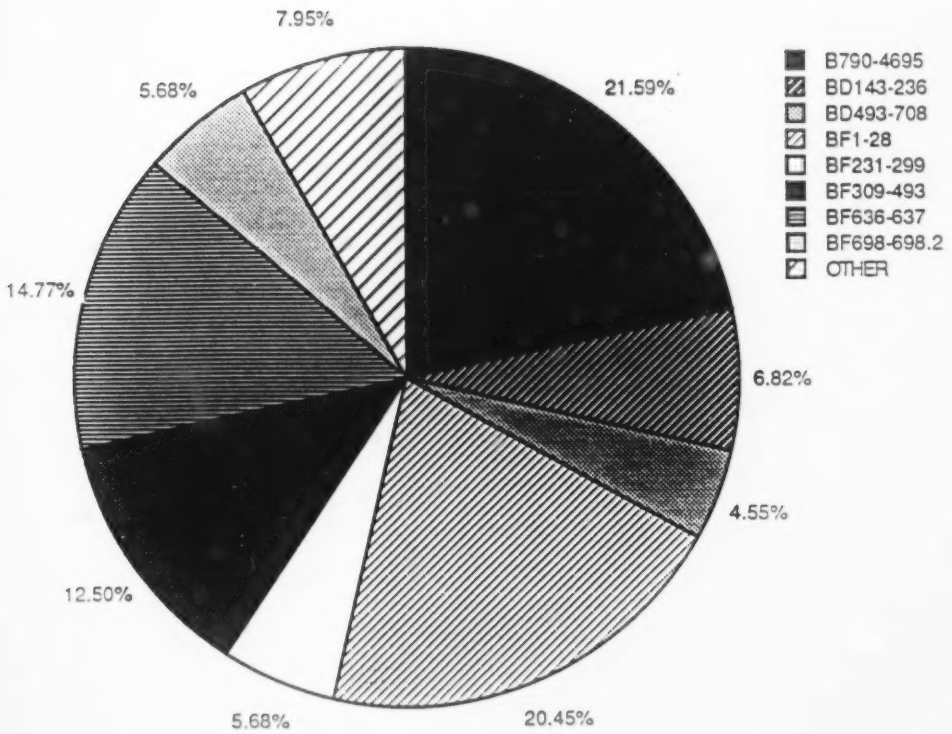

FIGURE 3 INPUT FOR B CLASS

H INPUTS

H1 -- Social Sciences
H61-62 -- Theory and Methodology [3/3E]
HD1-91 -- Industrial Management [3/3E]
Hf5001-5780 -- Business Administration [3/3E]
HM -- Sociology [3/3E]
HM251-291 -- Social Psychology [3/3E]
HN -- Social History, Problems & Reforms [3/3E]
HQ503-1064 -- Family & Marriage [3/3E]

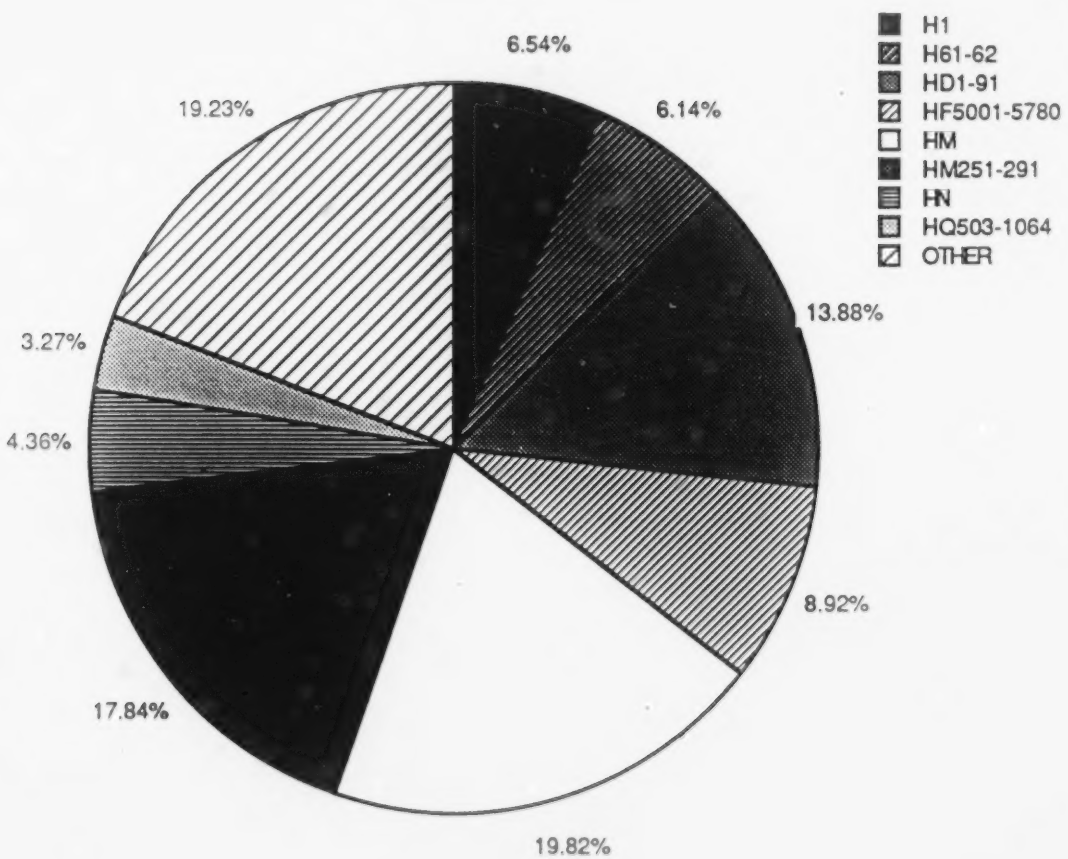

Figure 4. % INPUT FOR H CLASS

L INPUTS

L7-97 -- Societies & Associations [3/3E]
LA201-396 -- Education [3/3E]
LB1101-1139 -- Higher Education [3/3E]

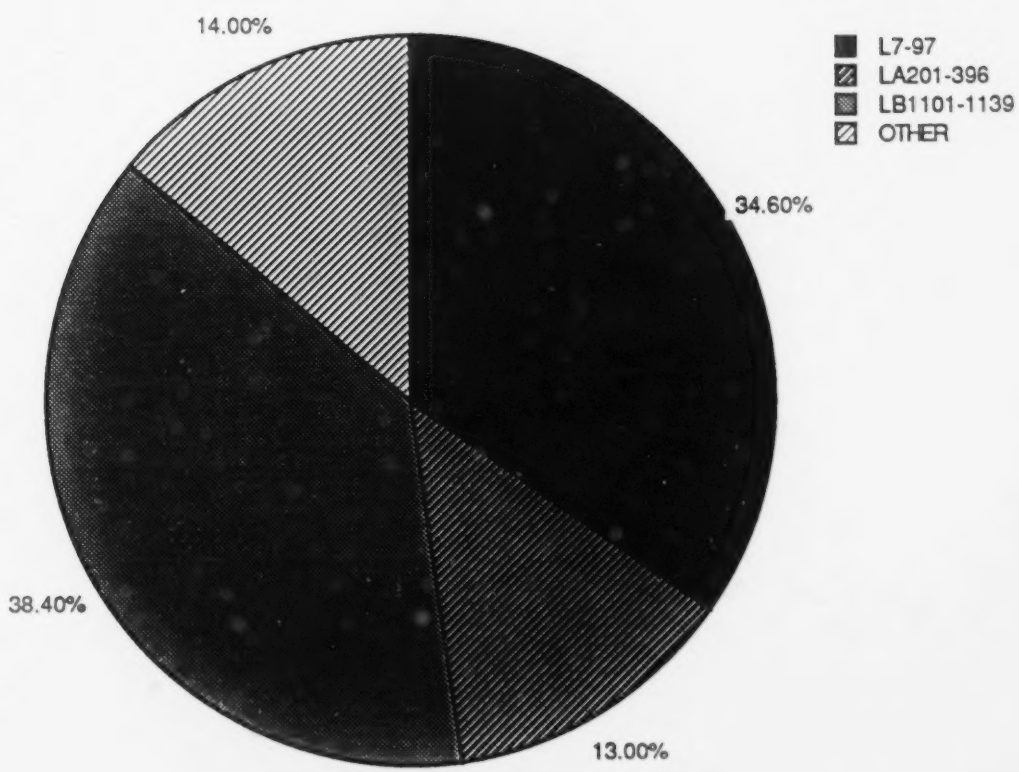

Figure 5. % INPUT FOR L CLASS

P INPUTS

P87-96 -- Mass Media & Communication [3/2]
PN4000-4355 -- Oratory, Elocution, & Recitation
PN4699-5650 -- Journalism

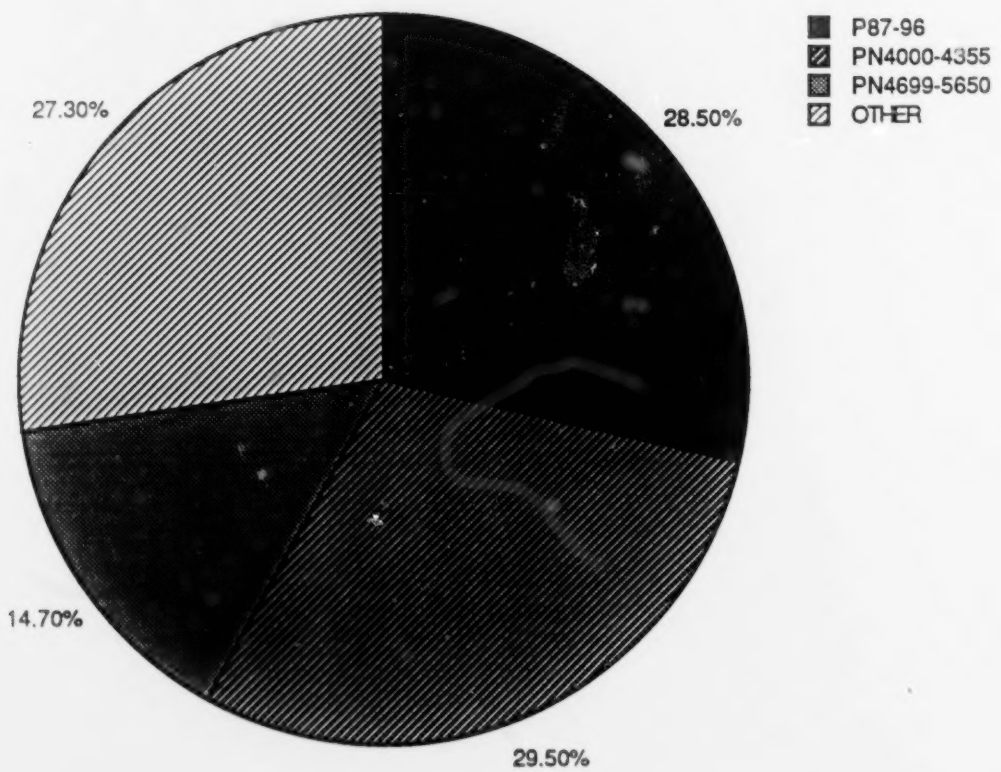

Figure 6. % INPUT FOR P CLASS

Q INPUTS

Q -- Science (General)
QA75-76 -- Computer Science & Data Processing

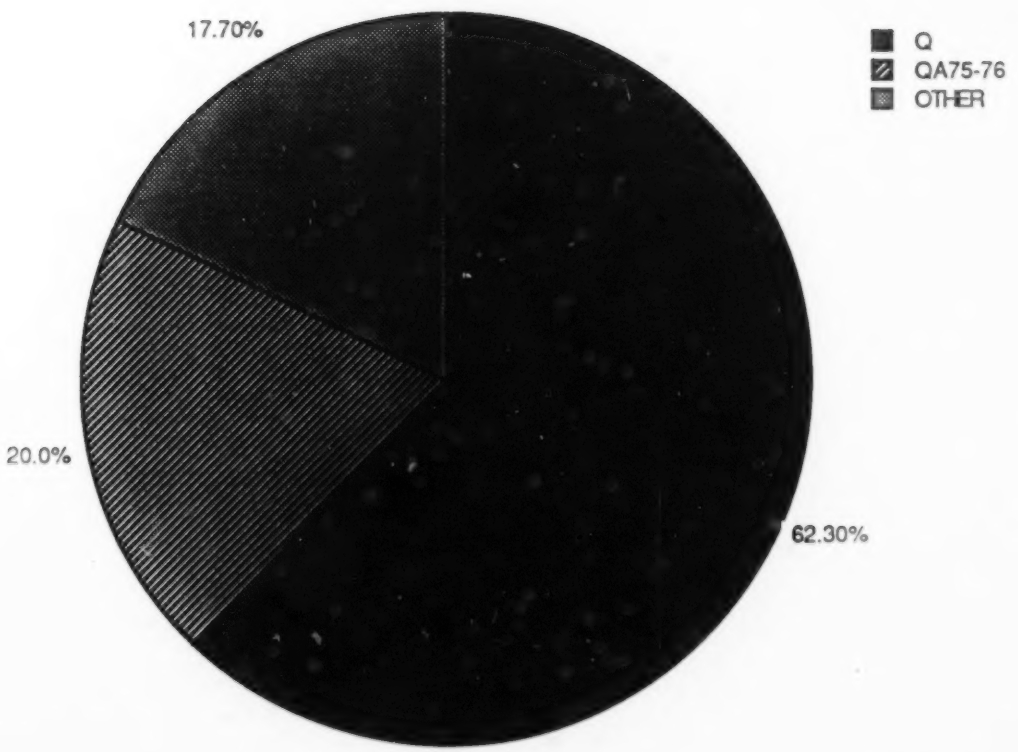

Figure 7. % INPUT FOR Q CLASS

Z INPUTS

Z670-671 -- Library Science Periodicals [3/3]
Z675 -- Classes of Libraries [3/3]
Z678 -- Library Automation [4/4]
Z699 -- Machine Information Storage [4/4]
Z721-871 -- Library History [3/3]
Z1007-1009 -- Bibliographical Periodicals [4/4]

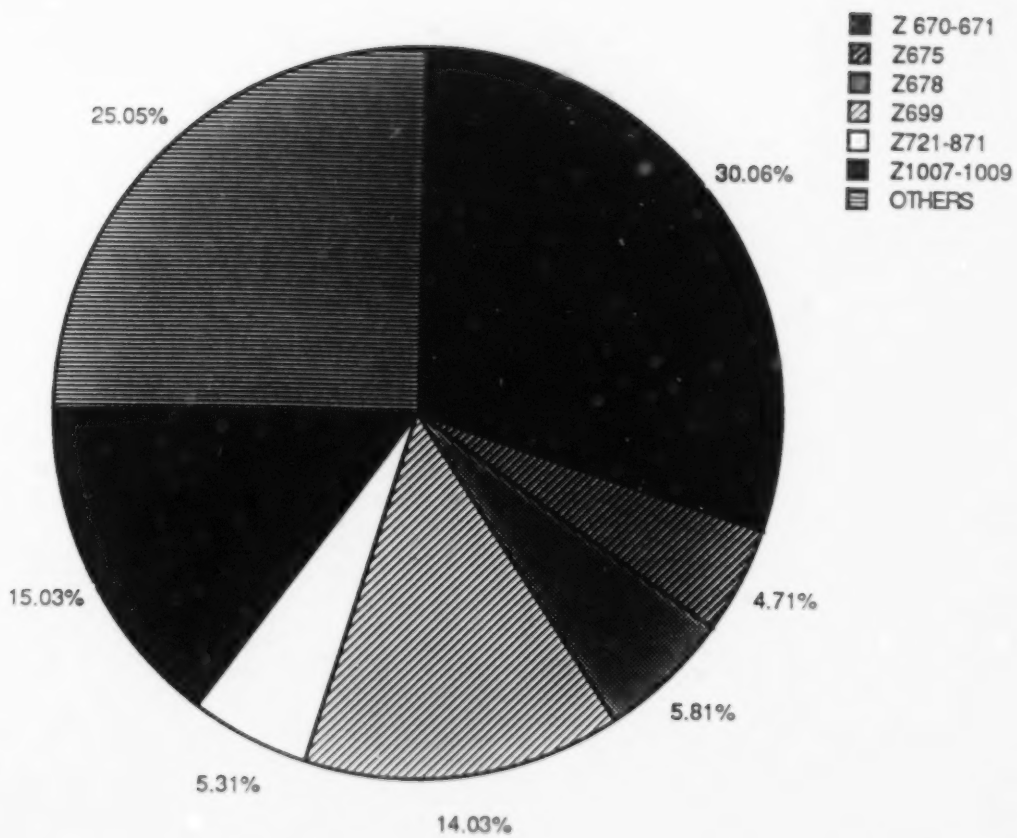

Figure 8. % INPUT FOR Z CLASS